

Weekly Report

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2017.08.07 - 2017.08.13

Projects

InfoVis Paper Review

- Revising based on the comments.
- The script of projection is fixed to generate the pixel-wise projection directly.

Misc.

Research Course

- The materials are collected.
- A framework is made.

Plan for the Next Week

- Submit the InfoVis paper;
- Make the slides for the research course.

Paper Reading

This week I skipped several available preprints of the accepted papers in VIS 2017.

Machine Learning-Related Papers

This year in VAST there are at least 15 papers that are related to machine learning approaches, including 8 deep learning-related papers. Most of the 8 papers focus on how to interpret deep learning models, input and output and the training process.

Two of them has released preprint versions [1, 2]. They both utilize several same modules, such as projections of output feature vectors for a specific layer, and statistics of classification results. However the two papers differ from the level of visual analysis schemes. I am currently looking forward to Martin Wattenberg's paper which cooperated with Google Tensorflow. I consider there should be some real things in it.

Another interesting work [3] from InfoVis focuses on applying machine learning methods to selecting proper graph layouts. In their method, a lot of initial graph layouts are firstly generated by a set of common graph layout methods (such as the force-directed layout and its variants). A similarity metric called deep graph kernel [4] is used for measuring difference layout results. Finally each layout result is considered as a point, and all the points are projected onto 2-D plane. In the projection result, visually similar layouts are clustered, thus the user is able to explore interesting and favorite layout results.

References

- [1] M. Kahng, P. Andrews, A. Kalro, and D. H. Chau, “ActiVis: Visual Exploration of Industry-Scale Deep Neural Network Models,” 2017.
- [2] N. Pezzotti, T. Ollt, J. Van Gemert, B. P. F. Lelieveldt, E. Eisemann, and A. Vilanova, “DeepEyes : Progressive Visual Analytics for Designing Deep Neural Networks,” *IEEE Transactions on Visualization and Computer Graphics*.
- [3] O.-h. Kwon, T. Crnovrsanin, and K.-l. Ma, “What Would a Graph Look Like in This Layout ? A Machine Learning Approach to Large Graph Visualization,” *IEEE Transactions on Visualization and Computer Graphics*, 2018.
- [4] P. Yanardag and S. Vishwanathan, “Deep graph kernels,” in *Proceedings of the 21th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining*, pp. 1365–1374, ACM, 2015.